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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,399	02/03/2005	Alan R Malvern	540-550	4139
23117	7590	02/07/2006	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			KUNDU, SUJOY K	
			ART UNIT	PAPER NUMBER
			2863	

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

8/K

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/523,399		MALVERN ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Sujoy K. Kundu		2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                    |                                                                             |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____.                                                |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>02/03/2005</u> .                                                          | 6) <input type="checkbox"/> Other: ____.                                    |

## **DETAILED ACTION**

### ***Abstract***

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it exceeds 150 words in length. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geier et al (6,577,952) in view of Jau Hsiung Wang and Yang Gao ("Fuzzy Logic Expert Rule based Multi-Sensor Data Fusion for Land Vehicle Attitude Estimation").

With regards to Claim 1, Geier teaches a method of calibrating bias drift with operating temperature over an operating temperature range for a gyroscope (Column 2, Lines 37-45) having a substantially planar, substantially ring shaped silicon vibrating structure, primary drive means for putting and maintaining the vibrating structure in carrier mode resonance, and secondary drive means for nulling response mode motion of the vibrating structure, which secondary drive means includes means to separate a detected response mode motion signal into a real component induced by applied rotation of the vibrating structure gyroscope and a quadrature component which is an error term indicative of error mismatch between carrier mode resonance frequency and response mode resonance frequency, including the steps of measuring, over an operating temperature range of the vibrating structure gyroscope (Column 2, Line 46 – Column 3, Line 15), primary drive means voltage (Column 6, Lines 8-11), which is a measure of change in quality factor LQ of the vibrating structure with temperature, vibrating structure frequency  $f$  which is a measure of change in temperature of the vibrating structure, secondary drive quadrature component values  $S_q$  which is a measure of real component bias errors with temperature, and secondary drive real component values  $S_r$  which is a measure of change in bias, that is the zero inertial rate offset, of the vibrating structure gyroscope with temperature (Column 2, Line 46 – Column 3, Line 15), substituting the values in the relationship, where  $a_{klm}$  are bias

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calibration coefficients for the vibrating structure gyroscope over the operating temperature range, and calculating from the relationship the coefficients  $a_{klm}$  to provide a set of bias calibration coefficients for the vibrating structure gyroscope over the tested operating temperature range (Column 2, Line 46 – Column 3, Line 15, Column 8, Line 53 – Column 9, Line 24).

However, Geier does not teach the following formula.

$$S_r = \sum_k f^k \sum_l S_q^l \sum_m P^m a_{klm}$$

Jau Hsiung Wang and Yang Gao ("Fuzzy Logic Expert Rule based Multi-Sensor Data Fusion for Land Vehicle Attitude Estimation") teach the following formula (Page 5, formula 10-12).

$$S_r = \sum_k f^k \sum_l S_q^l \sum_m P^m a_{klm}$$

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the formula as taught by Jau Hsiung Wang and Yang Gao into Geier for the purpose of improving velocity and position estimation (Page 1, Abstract).

With regards to Claim 2, Geier teaches in which the coefficients  $a_{klm}$  are calculated from the relationship by carrying out a multiple linear regression on the relationship (Column 8, Line 53 – Column 9, Line 24).

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With regards to Claim 3, Geier teaches a method in which the coefficients  $a_{klm}$  are calculated by Kalman filtering (Column 8, Line 53 – Column 9, Line 24).


**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sujoy K. Kundu whose telephone number is 571-272-8586. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on 571-272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SKK  
01/31/2006

  
John Barlow  
Supervisory Patent Examiner  
Technology Center 2800